

each R^2 is individually selected from the group consisting of hydrogen, C_1-C_8 alkyls, and C_1-C_8 alkoxys

wherein said polymer comprises from about 20-35% by weight of structure (II),

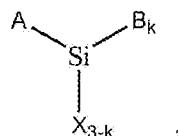
based upon the total weight of the polymer taken as 100% by weight.

Remarks:

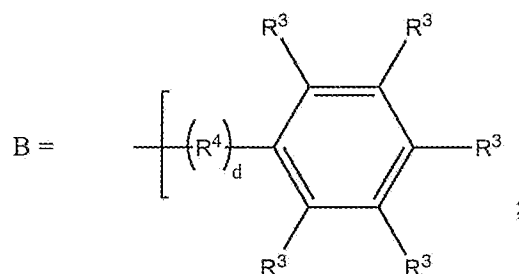
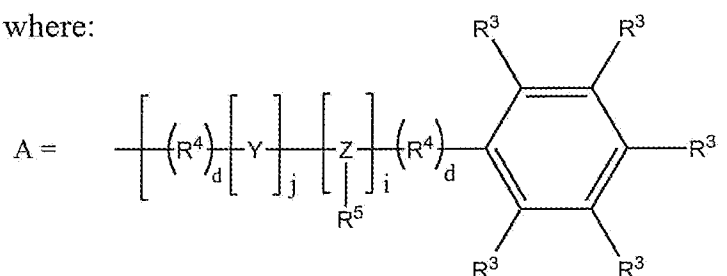
Claims 23-26, 28, 30-36, and 78-79 remain for consideration in this application. Claims 27, 29, 37-68 and 75-77 have been canceled, with Applicants reserving the right to pursue those claims in a divisional application. As a result of the species election, claims 1-22 and 69-74 are withdrawn, but not canceled. Of course, Applicants reserve the right to have claims 1-22 and 69-74 considered upon allowance of a generic claim.

The Examiner has rejected a number of the claims as being anticipated by U.S. Patent Publication No. 2002/0185199 to Myers et al., and U.S. Patent Nos. 3,468,834 to Oda et al., 5,353,705 to Lewis et al., 4,800,125 to Plueddemann, and 3,826,709 to Humphries. The Examiner also rejected dependent claims 24-25, 29, and 31-34 as being obvious in view of U.S. Patent Publication No. 2002/0185199 to Myers et al.

Of the remaining claims, claims 23, 78, and 79 are in independent format. Claim 23 has been amended to include the limitations of former dependent claim 29. That is, claim 23 now recites that the primer layer includes a silane having the formula



where:



each of i, j, and k is individually selected from the group consisting of 0 and 1, and if one of

i and j is 1, then the other of i and j is 0;

each R³ is individually selected from the group consisting of hydrogen, the halogens, C₁-C₈

alkyls, C₁-C₈ alkoxys, C₁-C₈ haloalkyls, aminos, and C₁-C₈ alkylaminos;

each R⁴ is individually selected from the group consisting of C₁-C₈ aliphatic groups;

each X is individually selected from the group consisting of halogens, hydroxyls, C₁-C₄

alkoxys and C₁-C₄ carboxyls;

Y is selected from the group consisting of oxygen and sulfur;

Z is selected from the group consisting of nitrogen and phosphorus; and

each d is individually selected from the group consisting of 0 and 1.

As stated above, claim 23 is now equivalent to canceled claim 29. Thus, the rejections raised against claim 23 in paragraphs 5-9 of the Office Action should now be withdrawn as the Examiner did not raise these rejections against claim 29. Rather, the only rejection raised by the Examiner against claim 29 can be found in paragraph 11 of the Office Action where the Examiner rejected claim 29 as obvious in view of the Myers et al. publication. The Applicants respectfully traverse this rejection.

The Applicants submit that there is no teaching or suggestion in the Myers et al. reference to use the claimed silane in a primer layer that is adjacent a microelectronic substrate. Furthermore, there is nothing in Myers et al. suggesting the use of a microelectronic substrate at all. In paragraph 4 of the Office Action, the Examiner took the position that "the 'microelectronic structure' limitation in the preamble provides no additional structural or material limitations to the claimed coated substrate." Even so, one of the limitations of claim 23 is "a microelectronic substrate having a surface." This limitation is not a part of the preamble, and it cannot be ignored. Because of this limitation, the Applicants respectfully submit that the Myers et al. reference is non-analogous art.

One inquiry to be made in rendering an obviousness determination, is to determine the scope and content of the prior art. A determination of the scope and content of the prior art involves distinguishing analogous art from non-analogous art. *See, In re Clay*, 966 F.2d 656, 658, 23 U.S.P.Q.2d 1058 (Fed. Cir. 1992). Only analogous art should be used when making an obviousness determination. To be considered analogous art, a reference must satisfy one of two criteria. *Id.* at

659-59. First, a reference is considered analogous if it is within the same field of endeavor as the claimed invention, regardless of the problem addressed. *Id.* Alternatively, even if a reference is not within the inventor's field of endeavor, the reference may still be analogous if it is reasonably pertinent to the particular problem with which the inventor is involved. *Id.* That is, a reference is analogous art if "it is one which, because of the matter with which it deals, logically would have commended itself to [the] inventor's attention in considering his problem." *Id.*

In considering the first criterion, it is clear that the Myers et al. reference is not within the same field of endeavor as the claimed invention. That is, the Myers et al. reference is concerned with putting antimicrobial coatings on metal sheets. These coatings are used to control the growth of bacteria, mold, and mildew, typically on stainless or carbon steel products (see e.g., paragraph [0014]). The present invention is concerned with the field of forming microelectronic devices (particularly with microlithographic processes) and coatings used to form such devices.

The next criterion to consider in determining whether the Myers et al. reference is analogous art is whether that reference is reasonably pertinent to the problem that the inventors of the present claims were addressing. This criterion is not met by the Myers et al. reference. The claimed invention is concerned with the problems associated with microelectronic substrates coming in contact with etchants during lithographic processes. The etchant will etch away the substrate, which is highly undesirable and will lead to defects in the final device. The Myers et al. reference is not at all pertinent to this problem. Controlling the growth of bacteria, mold, and mildew on stainless or carbon steel products is an entirely different problem. Thus, neither of the pertinent criteria is met

by the Myers et al. reference. It is respectfully submitted that the Myers et al. reference is non-analogous art, and that it is improper to use this reference as part of an obviousness rejection.

Even if the Examiner still believes this to be analogous art in spite of the foregoing arguments, one of ordinary skill would not find the claimed differences to be obvious. That is, one of ordinary skill in the microelectronic art would not be motivated to look to a reference concerned with preventing the growth of bacteria, mold, and mildew, and modify the teachings of the reference to use the claimed primer layer adjacent a microelectronic structure. One of the primary goals of the claimed invention is to provide etch protection for the microelectronic substrate against the strong, aqueous bases that are used during typical microlithography processes. The present invention provides a primer layer and protective layer that limits or avoids the penetration of the etchant between the substrate surface and the primer/protective layers beginning at the substrate edge, where typical such layers are more susceptible to lifting and leaving the underlying substrate edge vulnerable. This is accomplished in the claimed structure by selecting the appropriate primer and protective layers so that the primer/protective complex chemically bonds with the substrate. The coating in the Myers et al. reference is a physical coating that is intended to create a physical (i.e., one that limits diffusion of water or chemical agents through the protective coating) barrier for the underlying metal. One of ordinary skill in the art would not be motivated to look to a reference that is concerned with applying a physical, antimicrobial coating to stainless steel and the like and modify it to use the claimed primer/coating complex with a microelectronic substrate, which forms a chemical bond with the substrate. Thus, independent claim 23 (and all claims depending therefrom) is patentable over the Myers et al. reference.

Claims 78 and 79 have been newly added with this amendment. Claim 78 is essentially equivalent to claim 35 as originally filed except that the list of substrates has been narrowed to eliminate glass and metal substrates. Specifically, claim 78 recites that the microelectronic substrate is selected from the group consisting of Si substrates, SiO₂ substrates, Si₃N₄ substrates, SiO₂ on silicon substrates, Si₃N₄ on silicon substrates, quartz substrates, ceramic substrates, and semiconductor substrates. None of the references cited by the Examiner teach or suggest these types of substrates. Furthermore, none of the references cited by the Examiner are concerned with microelectronic structures, so they would not be expected to use any of the claimed substrates. It is submitted that claim 78 is patentable over the art of record for these reasons.

New claim 79 is similar to claim 25 as originally filed except that claim 79 recites that the polymer in the first protective layer comprises from about 20-35% by weight of structure (II). This is an important feature in the embodiment of claim 79 as this quantity of the structure (II) monomer provides the optimum bonding between the first protective coating and the primer layer. There is no teaching or suggestion of this range in the art of record.

Dependent claims 31-34 and 36 are patentable over the art of record for the same reasons discussed above with respect to independent claim 23. However, these claims are patentable over the art for further reasons as well. The Applicants have discovered that the use of halogenated (and particularly chlorinated) polymers as claimed adds a further benefit to the claimed microelectronic structure in that it protects the underlying coatings from dissolving in strong aqueous acids that are used during many microlithographic processes. Without these second coatings, the acids will dissolve, or diffuse through, the first protective coatings and attack the underlying substrate. There

is no teaching of this type of additional protective coating in the art of record. Furthermore, the prior art of record would not have encountered a similar problem, so there would be nothing in the teachings of the art of record that would motivate one of ordinary skill in the art to add such a layer.

In light of the foregoing it is respectfully submitted that the claims are patentable, and a Notice of Allowance is respectfully requested. Any additional fee which is due in connection with this amendment should be applied against Deposit Account No. 19-0522.

Respectfully submitted,

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